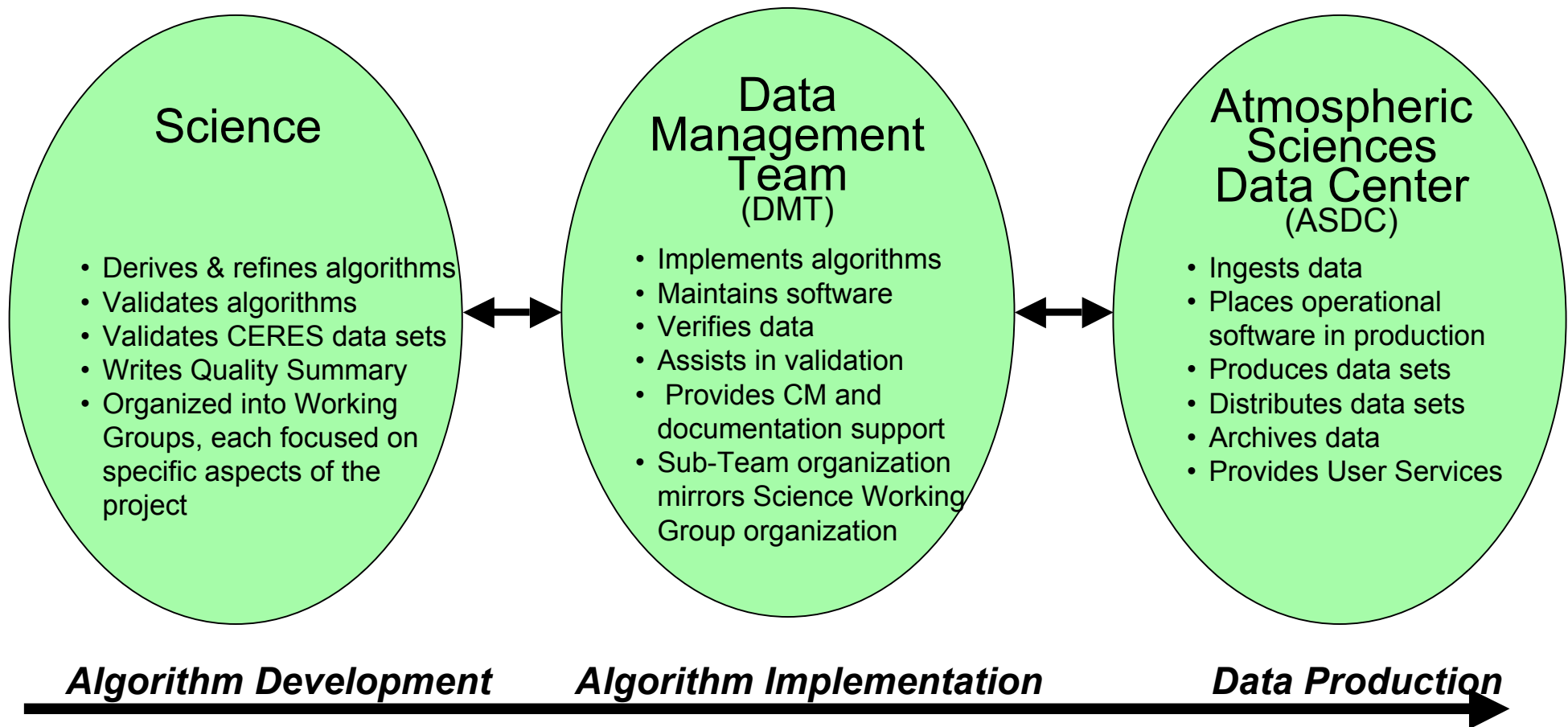


CERES Processing Status

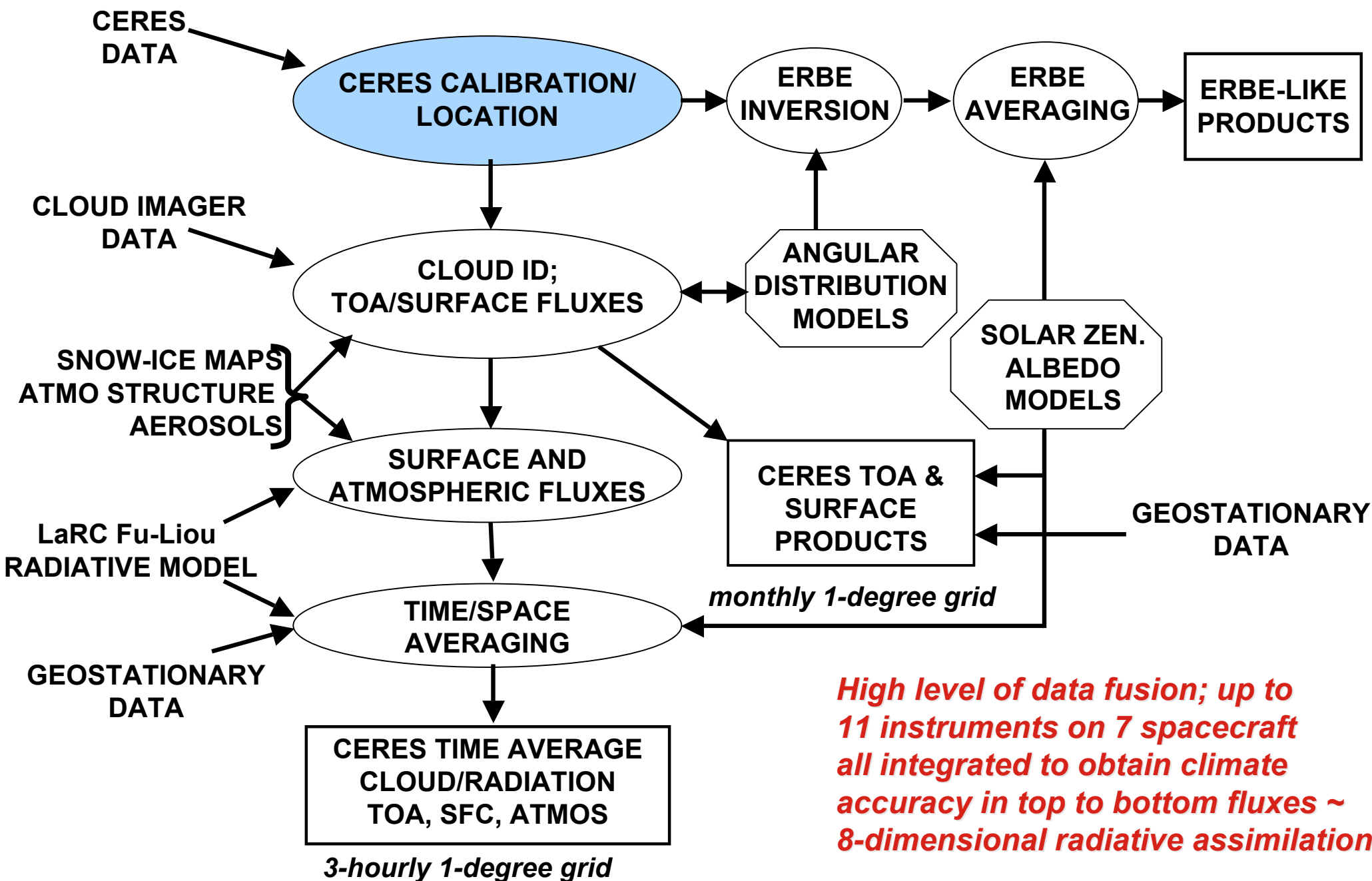
CERES Science Team Meeting
GISS - New York
October 27, 2008

Lisa Coleman
Lindsay Parker
Susan Sorlie
Data Management Team
Science Systems and Applications, Inc (SSAI)
Lisa.H.Coleman@nasa.gov

Data Management Team Role Within CERES Project



CERES DATA PROCESSING FLOW



CERES Input Products

Type of Data	Parameter Description	Freq	Source	Comments
INSTR	Instrument level 0 data	1/day	EOS Data Operations System	Attitude and Ephemeris data provided by ECS DPREP system at spacecraft-dependent frequencies
Cloud Imager Data	MODIS L1B Calibrated Imager radiances, Geolocation	~144/day	MODAPS	
Aerosol data	Instantaneous AOT (MOD04) Aerosol (Coln) Optical thickness, type/size, reflectances (MOD08)	~ 144/day 1/day	MODAPS	
Ozone data	Ozone Profile	1/day SMOBA 1/day OMI	NCEP SMOBA OMI	
Meteorological data	3-D Met Data 2-D atmospheric data	4/day 24/day	GMAO - Using GMAO G5-CERES data beginning with January 1, 2008	Only data from every 3rd hour is used
Precipitable Water	2-D constants	10/day	Global Hydrology Resource Center (GHRC)	
Geostationary data	MCIDAS data from 5 geostationary satellites per month	120/day	University of Wisconsin Space Science and Engineering Center (SSEC)	Only every 3rd hour is used for production
SURFMAP(Snow)	Snow Map	1/day	NCEP/NESDIS	
SURFMAP(Ice)	Ice Map	1/day	NSIDC	

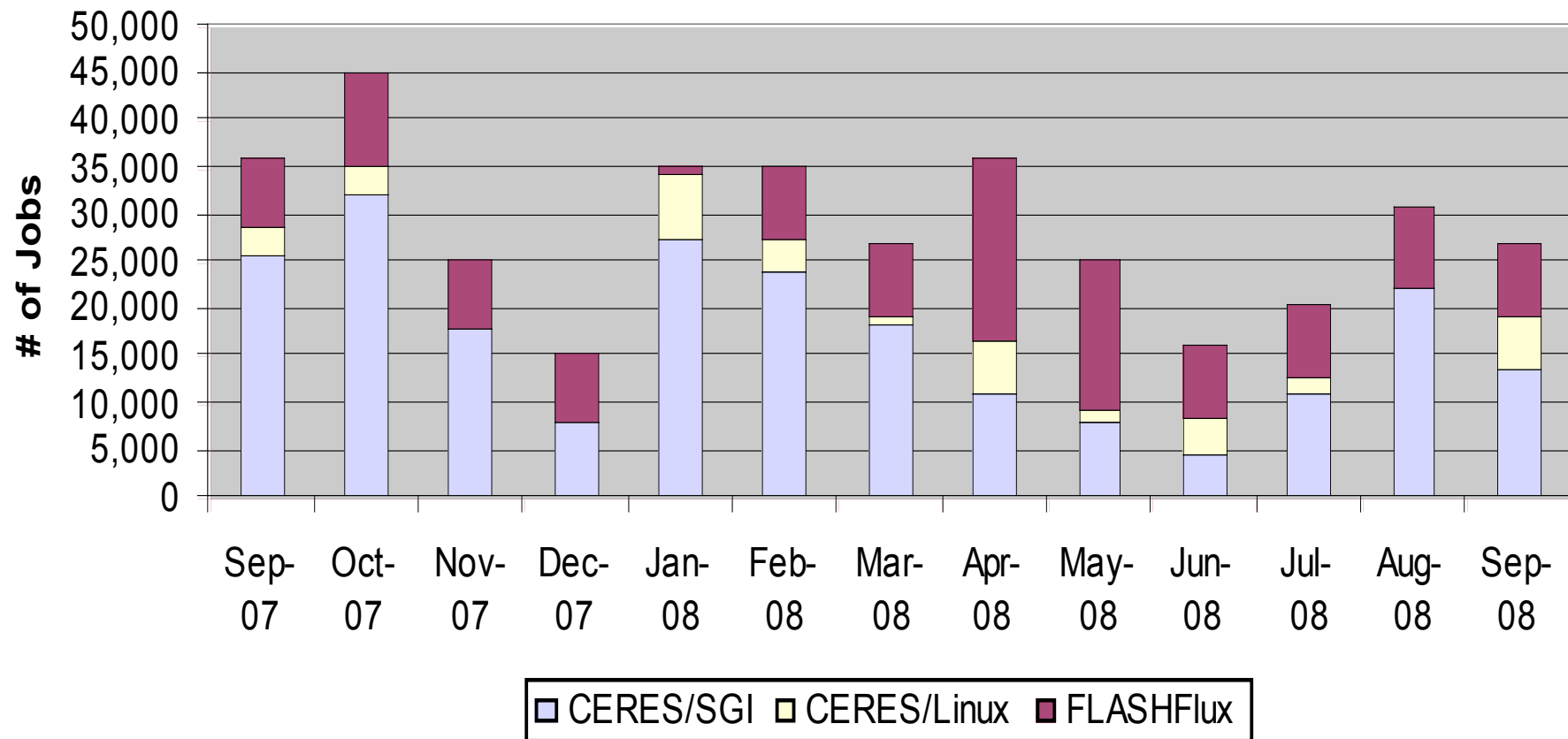
CERES Publicly Available Output Products

Data Product	Data Product Name	File Freq	Level
BDS	Bidirectional Scan	1/day	1B
ES-8	ERBE-Like Inst TOA Filtered Radiances	1/day	2
ES-9	ERBE-Like Monthly Regional Averages	1/mo	3
ES-4	ERBE-like Monthly Geographical Averages	1/mo	3
SSF	Single Scanner Footprint TOA/Surface Fluxes & Clouds	1/hr	2
SFC	Monthly Gridded Radiative Fluxes & Clouds	36/mo	3
SRBAVG	Monthly TOA/Surface Averages	5/mo	3
ISCCP-D2like-Day	Monthly Gridded Cloud Averages	1/mo	3
ISCCP-D2like-Nit	Monthly Gridded Cloud Averages	1/mo	3
ISCCP-D2like-GEO	Monthly Gridded GEO Cloud Averages	1/mo	3
CRS	Clouds and Radiative Swath	1/hr	2
FSW	Monthly Gridded Radiative Fluxes & Clouds	60/mo	3
SYN	Synoptic Radiative Fluxes and Clouds	1/day	3
AVG	Monthly Regional Radiative Fluxes and Clouds	1/mo	3
ZAVG	Monthly Zonal and Global Radiative Fluxes & Clouds	1/mo	3

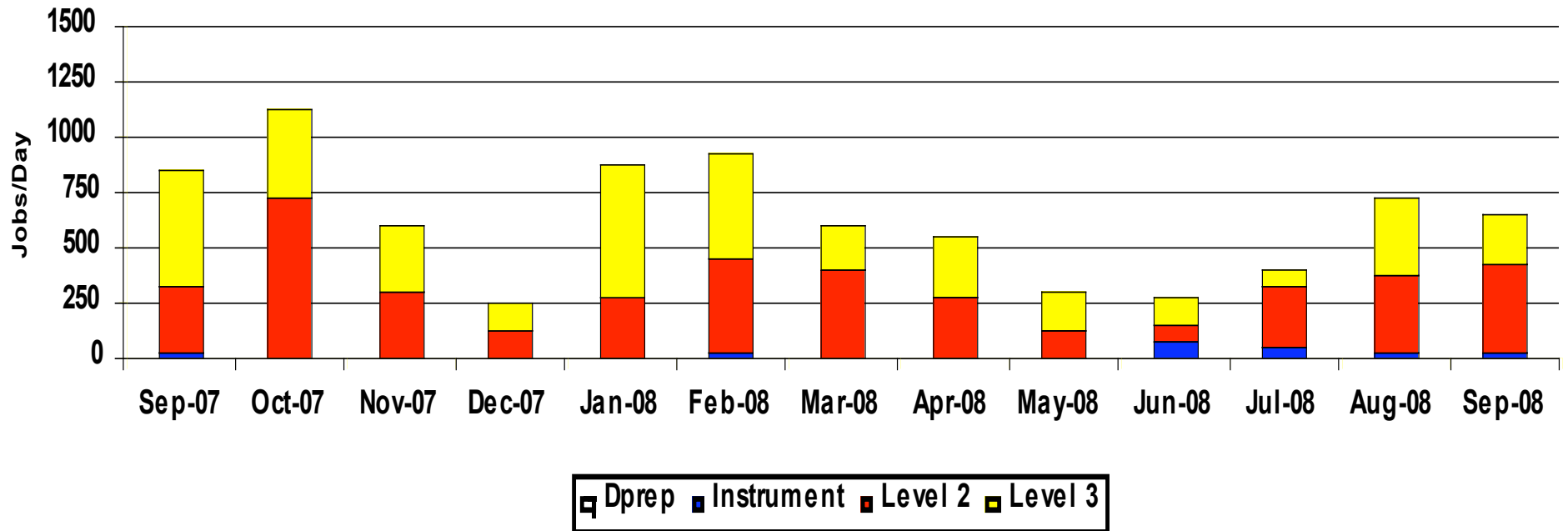
FLASHFlux

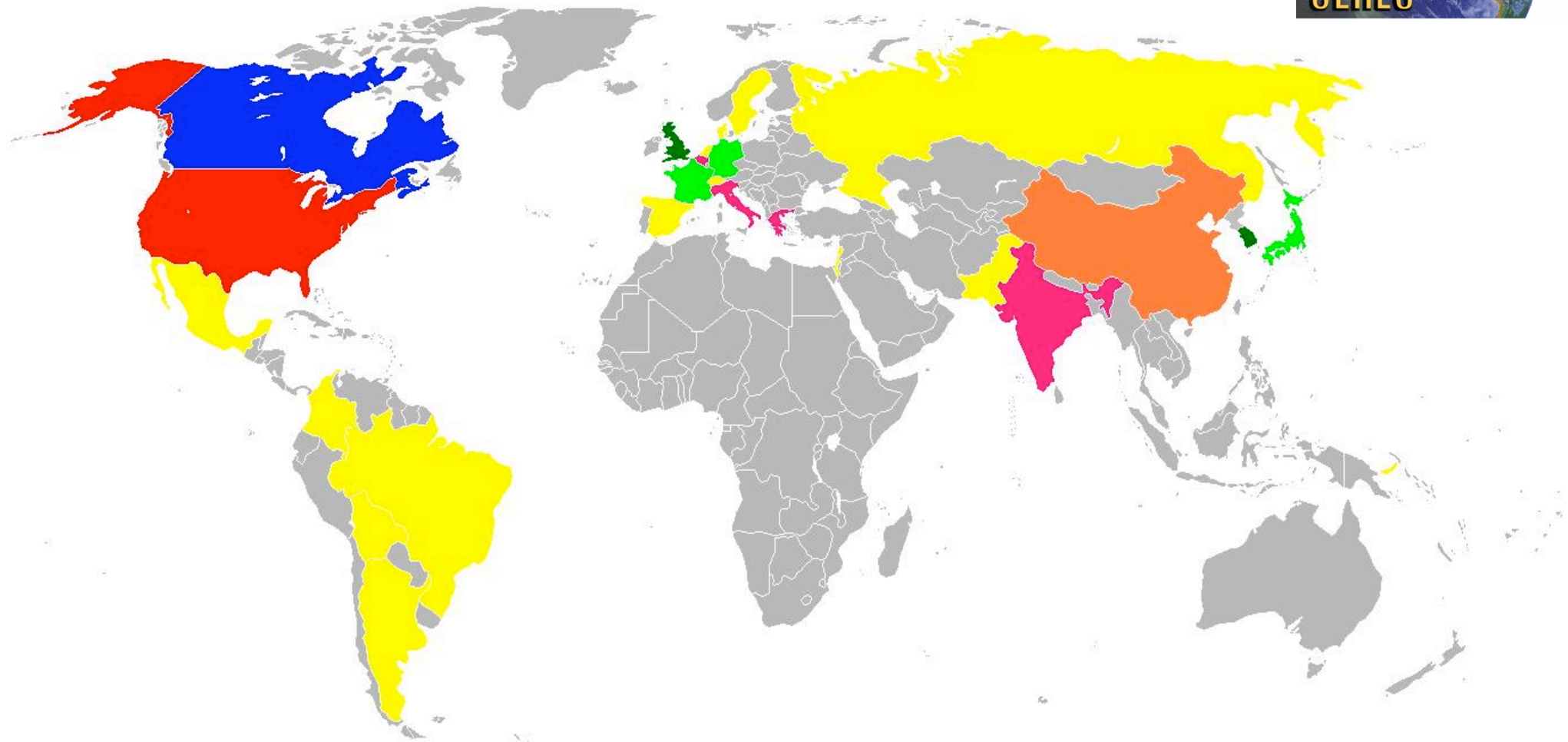
- The Fast Longwave And Shortwave radiative Fluxes project
- Initiated to meet the needs of the science community for global near real-time surface and TOA radiative fluxes.
- Accomplished by speeding up the processing of CERES and MODIS TOA observations with fast radiation algorithms to produce the fluxes within about a week of satellite measurements.
- They can accomplish this by using the first data produced by the CERES Instrument Processing system that are based on the Level 0 quick look data.
- Meteorological inputs available from GMAO on that time scale








CERES/FLASHFlux Jobs Processed



CERES Production - Daily Average



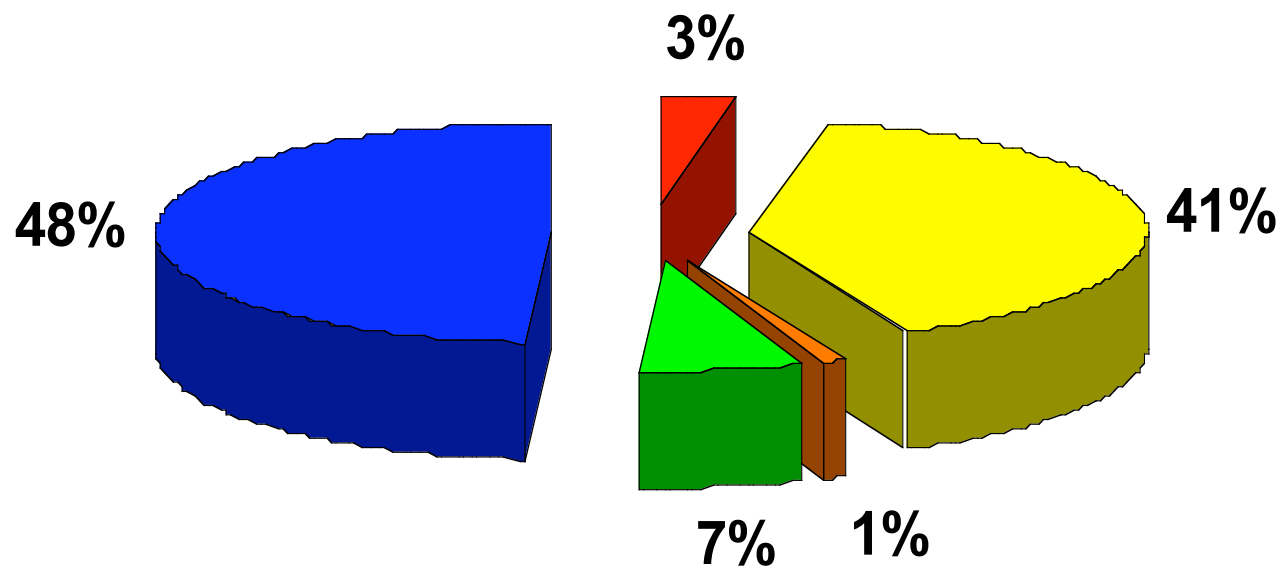
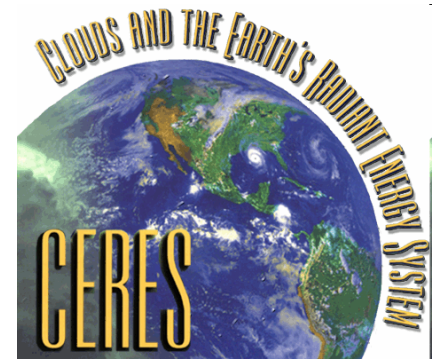


 1 - 6
  20 - 25
  30 - 40
  50 - 60
  70 - 80
  ~300
  ~925



CERES Data Orders by Affiliation

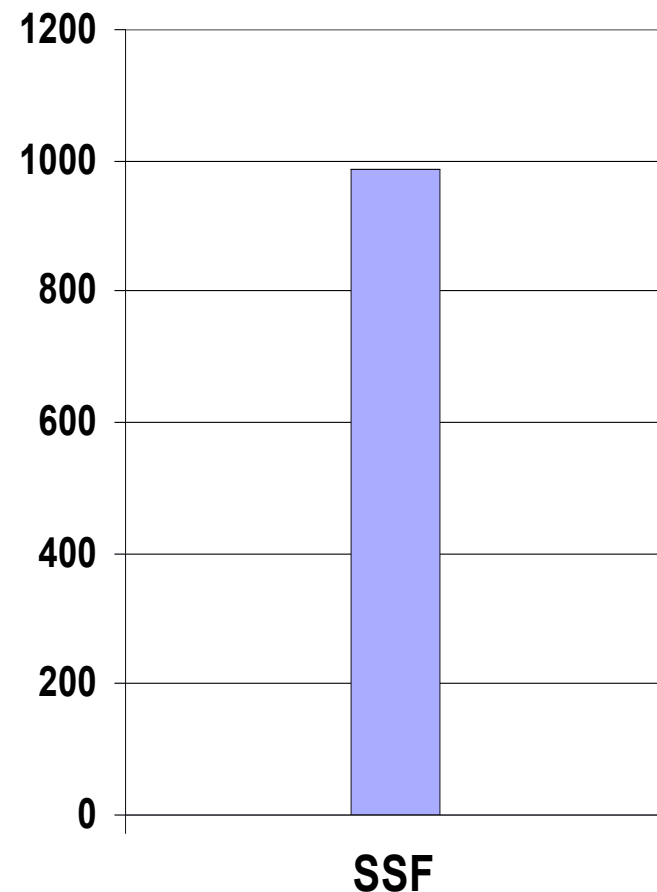
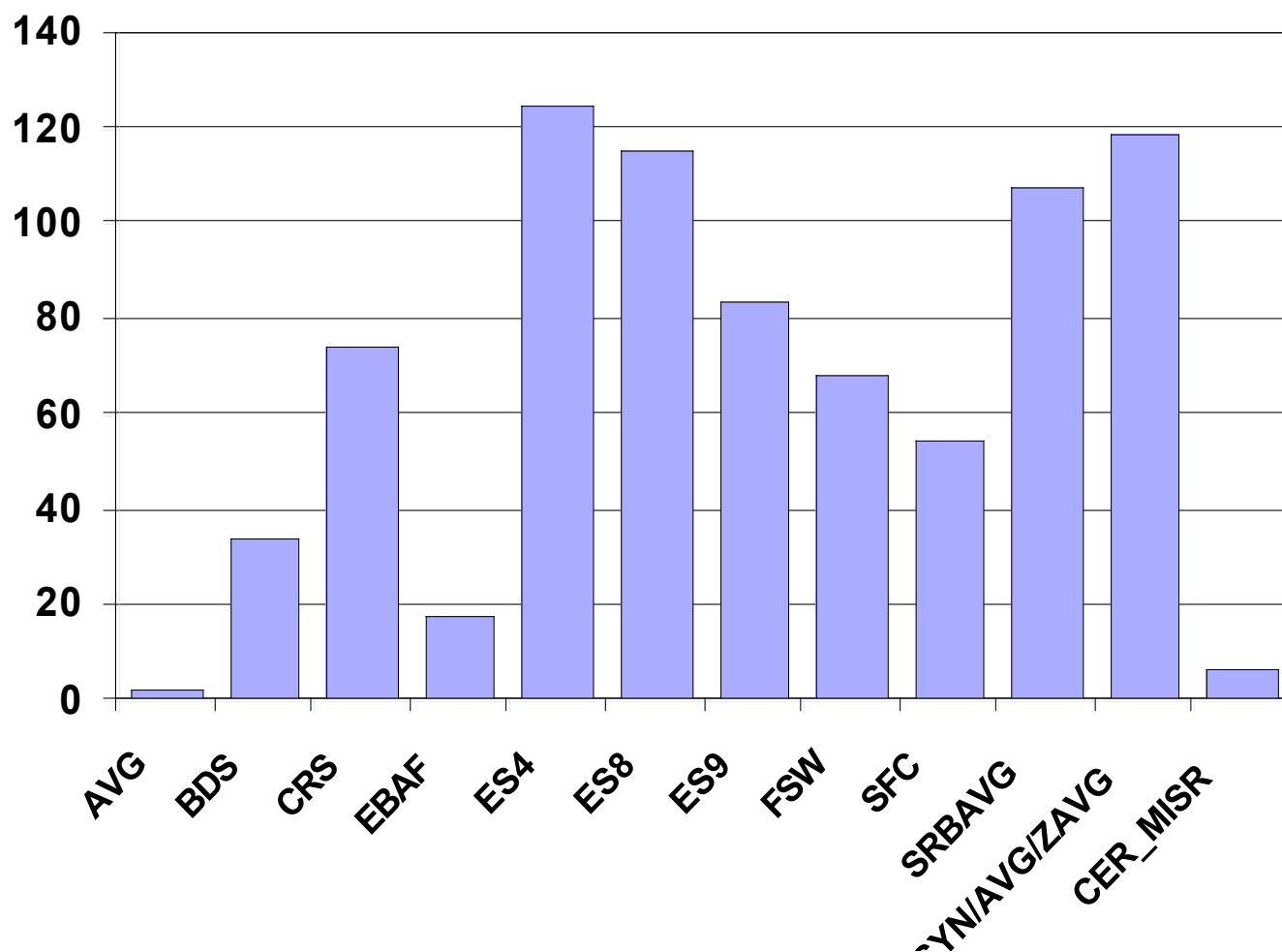
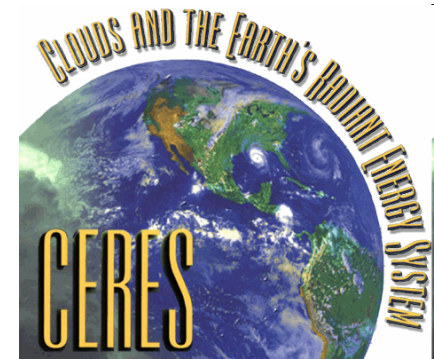
October 2007 – September 2008

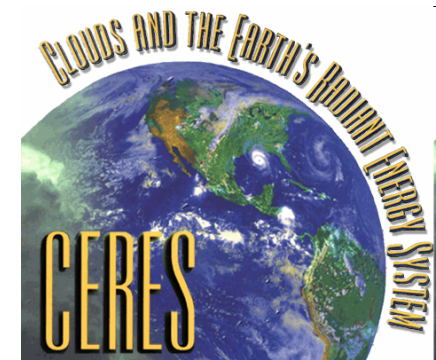




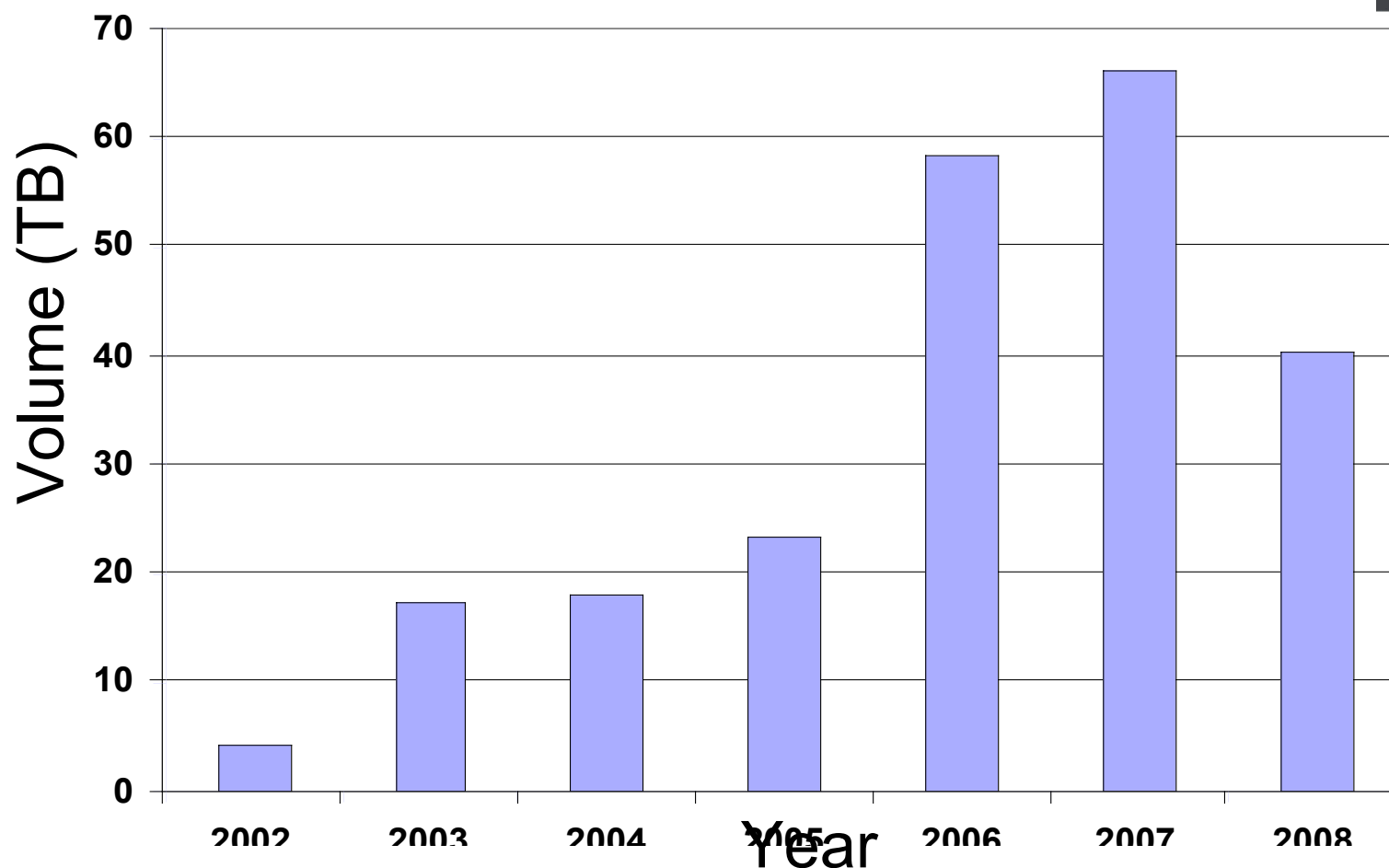
CERES Data Orders by Product

October 2007 - September 2008





CERES Data Distribution from ASDC



*Total data distributed to the public by end of September 2008
~ 228 TB; 9151 orders; 1581 unique users*

Documentation Overview

- Data Quality Summaries
 - Detailed information, good and bad, about a particular data set
 - Always consult Quality Summary prior to using data or publishing research
 - Even old, existing DQs can be updated anytime, so always check
- Data Products Catalog
 - Parameter lists for each data product, including ranges and units
 - Version of pages that apply to data set included with order
- Collection Guides
 - User Guide for data product
- Description/Abstract
 - Record of differences between data sets and configuration codes

Questions about Data Sets??

- Look over Data Products Catalog pages
- Reread Data Quality Summary
- Consult Collection Guide, if available
- Specific science questions may be sent to Contact Scientist listed in Section 2.2 of Collection Guide or in Description/Abstract
- All other questions should be sent to User Services larc@eos.nasa.gov
- For data products for which no Collection Guide or Description/Abstract is available, send all questions to User Services

CERES Data Product Status

- Data available free from the LaRC Atmospheric Sciences Data Center at: http://eosweb.larc.nasa.gov/project/ceres/table_ceres.html
- Rev1 SW flux correction tables for all months to 12/2007 (~ 1% changes) available in simple on-line tables in Data Quality Summaries: all products.
- Rev1 is a user applied correction and primarily affects trend studies.
- Aqua products more advanced than Terra especially for polar clouds.
- Products have frozen algorithms within a satellite/Edition: e.g. Terra Ed2B.
- Anticipate production of Edition3 BDS, ES-8, ES-4, and ES-9 products by mid 2009.
- Working with NASA NEWS to make the CERES/CALIPSO/CloudSat/MODIS (C3M) merged, fusion product available.

CERES Data Product Status

- ERBE-like TOA fluxes: Ed2 Terra 3/00 - 8/07, Ed2 Aqua 7/02 - 8/07
- SSF merged cloud/radiation: Ed2B Terra to 5/06, Ed2F Terra to 6/07, Ed2B Aqua to 5/06, and Ed2C Aqua to 8/07
- CRS Sfc/Atm/TOA/cloud/aerosol: Ed2B Terra to 5/06, Ed2F Terra to 5/07, Ed2B Aqua to 5/06 and Ed2C Aqua to 8/07
- SFC and FSW gridded 1-degree instantaneous: similar to SSF/CRS
- SRBAVG Terra Ed2E and Aqua Ed2B expected to begin production in early spring and include the new Daily1 (merged GGEO and CERES fluxes and clouds) and Daily2 (CERES only fluxes and clouds) products.
- Synoptic (SYN) and AVG/ZAVG products still Beta, but Ed2 is expected by next ST meeting.
- New ISCCP-D2like-Day/Nit and ISCCP-D2like-GEO Beta1 versions for selected months are now publicly available. Anticipate that the remaining Terra and Aqua months through October 2005 will be available by Dec 31.

The CERES INSANITY Problem

- INSANITY – SCF SAN that stored analysis and validation software and data, as well as production software under development
- Experienced serious failure August 6, from which ~40% of files were recovered
- CERES Team experienced 6 weeks of down time and then had to rebuild working environment once a replacement was available

Impacts of the INSANITY Failure

- Biggest impact: 2 month delay of delivery of Clouds Team production software to a Linux platform, resulting in possible delay of the Terra Ed2G and Aqua Ed2D (2008 forward) SSF/SFC/CRS/FSW datasets.
- Clouds Team software also used for NEWS, resulting in a 9 month delay in the generation of the Beta1 C3M product.

CERES Data Sets Publicly Released Since May 2008

Data Set	Comments
CER_CRS_Aqua-FMx-MODIS_Edition2C CER_CRS_Terra-FMx-MODIS_Edition2F	Extension of Terra Ed2B and Aqua Ed2C after switch from MODIS Collection4 to Collection5, May 2006 onward
CER_FSW_Aqua-FMx-MODIS_Edition2C CER_FSW_Terra-FMx-MODIS_Edition2F	Extension of Terra Ed2B and Aqua Ed2C after switch from MODIS Collection4 to Collection5, May 2006 onward
CER_ISCCP-D2like-Day_Terra-FMx-MODIS_Beta1 CER_ISCCP-D2like-Nit_Terra-FMx-MODIS_Beta1 CER_ISCCP-D2like-Day_Aqua-FMx-MODIS_Beta1 CER_ISCCP-D2like-Nit_Aqua-FMx-MODIS_Beta1	<ul style="list-style-type: none"> •First Beta version •Dependent on MODIS data •March 2000 – October 2005 (Terra) •July 2002 – October 2005 (Aqua)
CER_ISCCP-D2like-GEO_Composite_Beta1	<ul style="list-style-type: none"> •First Beta version •Independent of MODIS data •March 2000 – October 2005
CERES_EBAF_TOA_Terra_Edition1A	<ul style="list-style-type: none"> •EBAF - Energy Balanced and Filled •Adjusted net TOA flux dataset •netCDF format •March 2000 – October 2005

CERES Data Sets Currently In Production

Data Set	Comments
CER_BDS_Terra-FMx_Edition2 CER_ES8_Terra-FMx_Edition2 CER_ES4_Terra-FMx_Edition2 CER_ES9_Terra-FMx_Edition2 CER_BDS_Aqua-FMx_Edition2/Ed2-NoSW CER_ES8_Aqua-FMx_Edition2/Ed2-NoSW CER_ES4_Aqua-FMx_Edition2/Ed2-NoSW CER_ES9_Aqua-FMx_Edition2/Ed2-NoSW CER_ES4_FM1+FM3_Edition2 CER_ES9_FM1+FM3_Edition2	2007 dates Combine only Crosstrack instruments
CER_SSF_Aqua-FMx-MODIS_Edition2C CER_SSF_Terra-FMx-MODIS_Edition2F CER_SFC_Aqua-FMx-MODIS_Edition2C CER_SFC_Terra-FMx-MODIS_Edition2F	2007 dates

Up and Coming CERES Data Sets Expected By June 2009 (1 of 3)

Data Set	Comments
CER_SRBAVGx_Terra-FMx-MODIS_Edition2E CER_SRBAVGx_Aqua-FMx-MODIS_Edition2B	Handle RAPS data Monthly product corresponding to SSF/SFC data sets
CER_AVG_Aqua-FMx-MODIS_Edition2B CER_AVG_Terra-FMx-MODIS_Edition2B CER_ZAVG_Aqua-FMx-MODIS_Edition2B CER_ZAVG_Terra-FMx-MODIS_Edition2B	First Edition version Monthly product corresponding to CRS/FSW data sets
CER_SYN_Aqua-FMx-MODIS_Edition2B CER_SYN_Terra-FMx-MODIS_Edition2B	First Edition version Monthly product corresponding to CRS/FSW data sets

Up and Coming CERES Data Sets Expected By June 2009 (2 of 3)

Data Set	Comments
CER_ISCCP-D2like-Day_Terra-FMx-MODIS_Edition2B CER_ISCCP-D2like-Day_Terra-FMx-MODIS_Edition2F CER_ISCCP-D2like-Nit_Terra-FMx-MODIS_Edition2B CER_ISCCP-D2like-Nit_Terra-FMx-MODIS_Edition2F CER_ISCCP-D2like-Day_Aqua-FMx-MODIS_Edition2B CER_ISCCP-D2like-Day_Aqua-FMx-	<ul style="list-style-type: none"> •Based on SSF Edition numbers. •Dependent on MODIS data
CER_ISCCP-D2like_GEO_Composite_Edition2A	<ul style="list-style-type: none"> •Based on SFC Edition numbers •Independent of MODIS data

Up and Coming CERES Data Sets Expected By June 2009 (3 of 3)

Data Set	Comments
CER_BDS_Aqua-FMx_Edition3 CER_ES8_Terra-FMx_Edition3 CER_ES4_Aqua-FMx_Edition3 CER_ES9_Terra-FMx_Edition3	<ul style="list-style-type: none"> • Incorporates Edition3 gains and spectral response functions
CER_SSF_Aqua-FMx-MODIS_Edition2D CER_SSF_Terra-FMx-MODIS_Edition2G CER_SFC_Aqua-FMx-MODIS_Edition2D CER_SFC_Terra-FMx-MODIS_Edition2G CER_CRS_Aqua-FMx-MODIS_Edition2D CER_CRS_Terra-FMx-MODIS_Edition2G CER_FSW_Aqua-FMx-MODIS_Edition2D CER_FSW_Terra-FMx-MODIS_Edition2G	<ul style="list-style-type: none"> • Extension of Terra Edition2F and Aqua Edition2C data sets after the switch to GMAO's G5-CERES dataset for 2008 • No CERES algorithm changes
CER_SSF_Aqua-FMx-MODIS_Ed2F-NewIGBP	Replaces current IGBP map used in CERES processing with updated IGBP map based on MODIS Collection 004 (plan to produce 2 yrs)

For the Record Slides

Updated Since May 2008



Older CERES Science Data Sets

Still of Interest (Calibration/Validation)

Data Set	Comments
CER_BDS_TRMM-PFM_Edition1-CV CER_ES8_TRMM-PFM_Edition1-CV CER_ES4_TRMM-PFM_Edition1-CV CER_ES9_TRMM-PFM_Edition1-CV CER_BDS_TRMM-PFM_Ed1-CV-TransOps CER_ES8_TRMM-PFM_Ed1-CV-TransOps CER_ES4_TRMM-PFM_Ed1-CV-TransOps CER_ES9_TRMM-PFM_Ed1-CV-TransOps	<ul style="list-style-type: none">• 12/27/1997 through 8/31/1998; March 2000 (Edition1-CV)• Select transient operation periods during 1999 (Ed1-CV-TransOps)• Algorithms held constant across entire data set
CER_BDS_Terra-FMx_Edition1-CV CER_ES8_Terra-FMx_Edition1-CV CER_ES4_Terra-FMx_Edition1-CV CER_ES9_Terra-FMx_Edition1-CV	<ul style="list-style-type: none">• All Terra data from time the covers opened through present• Replaces Edition1• Algorithms to be held constant across entire data set• Algorithms consistent between Terra and Aqua• Publicly available



Older CERES Science Data Sets

Still of Interest (Calibration/Validation)

Data Set	Comments
CER_BDS_Aqua-FMx_Edition1-CV CER_ES8_Aqua-FMx_Edition1-CV CER_ES4_Aqua-FMx_Edition1-CV CER_ES9_Aqua-FMx_Edition1-CV	<ul style="list-style-type: none">• All Aqua-FM3 data from time the covers opened through present• Aqua FM4 data from 6/19/02 - 3/29/05• Replaces Edition1• Algorithms to be held constant across entire data set• Publicly available
CER_BDS_Aqua-FM4_Ed1-CV-NoSW CER_ES8_Aqua-FM4_Ed1-CV-NoSW CER_ES4_Aqua-FM4_Ed1-CV-NoSW CER_ES9_Aqua-FM4_Ed1-CV-NoSW	<ul style="list-style-type: none">• 3/30/05 through present• Same algorithms and processing as Edition1-CV• Due to SW channel failure, no daytime SW or LW radiances and fluxes• Available to Science Team
CER_BDS_Aqua-FM4_AnomOps-Ed1-CV CER_ES8_Aqua-FM4_AnomOps-Ed1-CV CER_ES4_Aqua-FM4_AnomOps-Ed1-CV CER_ES9_Aqua-FM4_AnomOpsEd1-CV	<ul style="list-style-type: none">• 7/19/05 through 8/30/05• Same algorithms and processing as Edition2• Due to instrument temperature changes made in hopes of reversing SW channel problem, data quality varies from Ed1-CV-NoSW• Available to Science Team (no public release)

Older CERES Science Data Sets

Still of Interest (TRMM)



Data Set	Comments
CER_BDS_TRMM-PFM_Edition1 CER_ES8_TRMM-PFM_Edition2 CER_ES4_TRMM-PFM_Edition2 CER_ES9_TRMM-PFM_Edition2 CER_SSF_TRMM-PFM-VIRS_Edition2B CER_SFC_TRMM-PFM-VIRS_Edition2B CER_SRBAVG_TRMM-PFM-VIRS_Edition2B CER_CRS_TRMM-PFM-VIRS_Edition2C CER_FSW_TRMM-PFM-VIRS_Edition2C	<ul style="list-style-type: none"> • TRMM period Jan'98 – Aug'98; Mar'00 • Publicly available
CER_BDS_TRMM-PFM_Transient-Ops2 CER_ES8_TRMM-PFM_Transient-Ops2 CER_SSF_TRMM-PFM-VIRS_Edition2B-TransOps	<ul style="list-style-type: none"> • Transient Operations period Jan'99 – Jul'99 • BDS not publicly released; others publicly available
CER_ES4_PFM+FM1+FM2_Edition2 CER_ES9_PFM+FM1+FM2_Edition2 CER_ES4_PFM+FM1_Edition2 CER_ES9_PFM+FM1_Edition2 CER_ES4_PFM+FM2_Edition2 CER_ES9_PFM+FM2_Edition2	<ul style="list-style-type: none"> • Mar'00 only month of TRMM, Terra overlap • Publicly available
CER_SSF_TRMM-SIM-VIRS_Edition2-VIROnly	<ul style="list-style-type: none"> • Processed only for months when CERES was off • Processed through Jul'01; no additional months expected • Publicly available

Older CERES Science Data Sets

Still of Interest (Terra)



Data Set	Comments
CER_BDS_Terra-FMx_Edition2 CER_ES8_Terra-FMx_Edition2 CER_ES4_Terra-FMx_Edition2 CER_ES9_Terra-FMx_Edition2	<ul style="list-style-type: none"> • Rev1 SW corrections available • 2/25/00 – 8/31/07 processed, 9/1/07 - 12/31/07 coming Winter '09 • Publicly available
CER_ES4_FM1+FM2_Edition2 CER_ES9_FM1+FM2_Edition2	<ul style="list-style-type: none"> • Processed Mar'00 through Dec'02, production then halted • Replaced by Terra/Aqua combined Crosstrack data sets (FM1+FM3, FM1+FM4, FM2+FM3 Edition2) • Publicly available
CER_SSF_Terra-FMx_Edition2B CER_SFC_Terra-FMx-MODIS_Edition2C	<ul style="list-style-type: none"> • 2/25/00 – 7/31/06 • Uses Edition2 instrument data as input • Edition2 Clouds, Final Terra ADMs, Rev1 SW corrections available • Publicly available
CER_SRBAVG_Terra-FMx-MODIS_Edition2D	<ul style="list-style-type: none"> • Edition2C SFC are input • 3/00 - 10/05 processed, no additional processing expected • Publicly available
CER_CRS_Terra-FMx_Edition2B CER_FSW_Terra-FMx-MODIS_Edition2C	<ul style="list-style-type: none"> • 3/1/00 – 06/30/06 processed • Edition2B SSF input; latest version of SARB algorithms • Publicly available
CER_SYN_Terra-FMx-MODIS_Beta3 CER_AVG_Terra-FMx-MODIS_Beta3 CER_ZAVG_Terra-FMx-MODIS_Beta3	<ul style="list-style-type: none"> • Processed 3/00 - 10/05, but 10/04 - 10/05 had problems and were pulled from view • Publicly available

Older CERES Science Data Sets

Still of Interest (Aqua)



Data Set	Comments
CER_BDS_Aqua-FMx_Edition2 CER_ES8_Aqua-FMx_Edition2 CER_ES4_Aqua-FMx_Edition2 CER_ES9_Aqua-FMx_Edition2 CER_BDS_Aqua-FM4_Ed2-NoSW CER_ES8_Aqua-FM4_Ed2-NoSW CER_ES4_Aqua-FM4_Ed2-NoSW CER_ES9_Aqua-FM4_Ed2-NoSW	<ul style="list-style-type: none"> • Rev1 SW corrections available • Aqua-FM4 Edition2 processed 6/18/02 – 3/29/05 • Aqua-FM4 Ed2-NoSW processed 3/30/05 – 9/01/07, expect 9/2/07 - 12/31/07 in Winter '09 • Aqua-FM3 Edition2 processed 6/18/02 – 9/01/07, expect 9/2/07 - 12/31/07 in Winter '09 • Edition2 publicly available • Ed2-NoSW available to Science Team
CER_ES4_FM1+FM3_Edition2 CER_ES4_FM2+FM3_Edition2 CER_ES4_FM1+FM4_Edition2 CER_ES9_FM1+FM3_Edition2 CER_ES9_FM2+FM3_Edition2 CER_ES9_FM1+FM4_Edition2	<ul style="list-style-type: none"> • Combine only Crosstrack instruments • 7/02 – 12/06 available, 1/07 – 08/07 expected in Fall '08, 09/07 – 12/07 expected in Winter '09 • Uses Terra Edition2 and Aqua Edition2 inputs • Publicly available

Older CERES Science Data Sets

Still of Interest (Aqua)



Data Set	Comments
CER_SSF_Aqua-FMx-MODIS_Edition2B CER_SSF_Aqua-FM4-MODIS_Ed2B-NoSW CER_SFC_Aqua-FMx-MODIS_Edition2B CER_SFC_Aqua-FM4-MODIS_Ed2B-NoSW	<ul style="list-style-type: none"> • Corrects Model B SW surface fluxes, all other parameters remain the same as Edition2A • 7/02 -4/06, FM4 SW channel failed 3/30/05 hour 18 • All SSF and Edition2B SFC publicly available • Ed2B-NoSW SFC available to Science Team only
CER_CRS_Aqua-FMx-MODIS_Edition2B CER_FSW_Aqua-FMx-MODIS_Edition2B	<ul style="list-style-type: none"> • Rev1 SW corrections available • Available only for main crosstrack instrument • 7/02 – 4/06 • Publicly available • Corrects Model B SW Surface fluxes, modifies aerosol hierarchy
CER_SSF_Aqua-FM3-MODIS_Edition2C CER_SSF_Aqua-FM4-MODIS_Ed2C-NoSW CER_SFC_Aqua-FM3-MODIS_Edition2C CER_SFC_Aqua-FM4-MODIS_Ed2C-NoSW	<ul style="list-style-type: none"> • Extension of Edition2B data sets • 1/06, 5/06-8/07 • All SSF and Edition2C SFC publicly available • Ed2C-NoSW SFC available to Science Team only • Expect to process remainder of 2007 Winter '09

Backup Slides

